

C2 2 (Amended) The fluid pump of [either] claim 4 or 5 wherein said magnet means is selected from the group consisting of permanent magnets, solenoids and electromagnets.

C2 Amend claim 25 as follows:

C2 4 25 (Thrice Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of diamagnets fixed with respect to said impeller;

a plurality of magnet means fixed with respect to said central frame, in magnetic communication with said plurality of diamagnets, and oriented generally axially and radially with said plurality of diamagnets, to thereby stabilize said impeller in both the axial and radial directions by magnetic forces levitating said impeller.

C2 Amend claim 27 as follows:

C2 5 27 (Amended). The fluid pump of claim 26 ⁴ 25 further comprising a plurality of magnet means fixed with respect to said housing in a generally axial direction and

one of diamagnets and permanent magnets fixed with respect to said impeller in a generally axial direction, whereby said impeller is provided with additional radial stability [radially stabilized] by levitating magnetic forces.

Amend claim 40 as follows:

40. (Amended). A fluid pump comprising:

- a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;
- a rotatable impeller disposed in said pumping chamber for rotation about an axis;
- a polarized electromagnetic means associated with said impeller and said housing for rotating said impeller about said axis;
- a plurality of diamagnets fixed with respect to one of said impeller and housing; and
- a plurality of permanent magnets fixed with respect to one of said housing and said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize said impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 41 as follows:

41 (Amended). The fluid pump of claim 40 wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 42 as follows:

42 (Amended). The fluid pump of claim 40 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 43 as follows:

43 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a rotatable impeller disposed in said pumping chamber for rotation about an axis;

a polarized electromagnetic means associated with said impeller and said housing for rotating said impeller about said axis;

a plurality of diamagnets fixed with respect to housing; and

a plurality of permanent magnets fixed with respect to said impeller such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet,

[whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 44 as follows:

⁹ 44 (Amended). The fluid pump of claim ⁴⁵ ~~43~~ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

~~Amend claim 45 as follows:~~

Amend 45
45 (Amended). The fluid pump of claim ⁴³ ~~43~~ further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 46 as follows:

¹¹ 46 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a rotatable impeller disposed in said pumping chamber for rotation about an axis;

a polarized electromagnetic means associated with said impeller and said housing for rotating said impeller about said axis;

a plurality of diamagnets axially fixed with respect to said impeller and radially fixed with respect to said housing; and

a plurality of permanent magnets axially fixed with respect to said housing and radially fixed with respect to said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 47 as follows:

~~47~~ (Amended). The fluid pump of claim ~~46~~ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

~~Amend claim 48 as follows:~~

~~48~~ (Amended). The fluid pump of claim 46 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 49 as follows:

~~49~~ (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a rotatable impeller disposed in said pumping chamber for rotation about an axis;

a polarized electromagnetic means associated with said impeller and said housing for rotating said impeller about said axis;

a plurality of diamagnets radially fixed with respect to said impeller and axially fixed with respect to said housing; and

a plurality of permanent magnets radially fixed with respect to said housing and axially fixed with respect to said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 50 as follows:

¹⁵
50 (Amended). The fluid pump of claim ¹⁶~~49~~ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

~~Amend claim 51 as follows.~~

51 (amended). The fluid pump of claim ¹⁶~~49~~ further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means

for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 52 as follows:

52 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of diamagnets fixed with respect to one of said impeller and central frame; and

a plurality of permanent magnets fixed with respect to one of said central frame and said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby

stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 53 as follows:

53 (Amended). The fluid pump of claim 52 wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 54 as follows:

54 (Amended). The fluid pump of claim 52 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 55 as follows:

55 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;
a plurality of diamagnets fixed with respect to said central frame; and
a plurality of permanent magnets fixed with respect to said impeller,
such that each said permanent magnet is disposed in magnetic communication with
a diamagnet and oriented one of generally axially and radially with said diamagnet,
[whereby the plurality of permanent magnets are oriented generally axially and
radially with said plurality of diamagnets] to thereby stabilize the impeller in both
the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 56 as follows:

¹⁸ 56 (Amended). The fluid pump of claim ¹⁷ 55 wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 57 as follows:

57 (Amended). The fluid pump of claim 55 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 58 as follows:

⁸⁰ 58 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of diamagnets axially fixed with respect to said impeller and radially fixed with respect to said central frame; and

a plurality of permanent magnets axially fixed with respect to said central frame and radially fixed with respect to said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 59 as follows:

59²¹ (Amended). The fluid pump of claim 58²⁰ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 60 as follows:

Amend

60 (Amended). The fluid pump of claim 58 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 61 as follows:

²³
61 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of diamagnets radially fixed with respect to said impeller and axially fixed with respect to said central frame; and

a plurality of permanent magnets radially fixed with respect to said central frame and axially fixed with respect to said impeller, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and

oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 62 as follows:

62 (Amended). The fluid pump of claim 61 wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 63 as follows:

63 (Amended). The fluid pump of claim 61 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 64 as follows:

64 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation
about an axis about said central frame;

a polarized electromagnetic means associated with said housing and
said impeller for rotating said impeller about said central frame;

a plurality of diamagnets fixed with respect to one of said impeller, said
central frame, and said housing; and

a plurality of permanent magnets fixed with respect to one of said
impeller, said central frame, and said housing, such that each said permanent
magnet is disposed in magnetic communication with a diamagnet and oriented one
of generally axially and radially with said diamagnet, [whereby the plurality of
permanent magnets are oriented generally axially and radially with said plurality of
diamagnets] to thereby stabilize the impeller in both the axial and radial directions
by magnetic forces levitating said impeller.

Amend claim 65 as follows:

65 (Amended). The fluid pump of claim 64 wherein said impeller has a density
substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 66 as follows:

66 (Amended). The fluid pump of claim 64 further comprising at least one of
means for conducting fluid from the peripheral region of the impeller and
discharging the fluid in opposed radial directions toward the impeller and means
for conducting fluid from the peripheral region of the impeller and discharging the
fluid in opposed axial directions toward the impeller, whereby said impeller is

1 levitated in at least one of said axially and radially directions by at least one of the
magnetic and fluid forces

Amend claim 67 as follows:

²⁶
67 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port
and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said
pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation
about an axis about said central frame;

a polarized electromagnetic means associated with said housing and
said impeller for rotating said impeller about said central frame;

a plurality of diamagnets fixed with respect to said impeller; and

a plurality of magnet means radially fixed with respect to said central
frame and axially fixed with respect to said housing, such that each said permanent
magnet is disposed in magnetic communication with a diamagnet and oriented one
of generally axially and radially with said diamagnet, [whereby the plurality of
permanent magnets are oriented generally axially and radially with said plurality of
diamagnets] to thereby stabilize the impeller in both the axial and radial directions
by magnetic forces levitating said impeller.

Amend claim 68 as follows:

²⁷
68 (Amended). The fluid pump of claim ²⁶~~67~~ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 69 as follows:

²⁸
69 (Amended). The fluid pump of claim 67 further comprising means at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 70 as follows:

²⁹
70 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of diamagnets fixed with respect to said impeller; and

a plurality of magnet means axially fixed with respect to said central frame and radially fixed with respect to said housing, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 71 as follows:

~~71~~³⁰ (Amended). The fluid pump of claim ~~70~~⁹⁹ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 72 as follows:

~~72~~³¹ (Amended). The fluid pump of claim 70 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 73 as follows:

~~73~~³² (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of permanent magnets fixed with respect to said impeller; and

a plurality of diamagnets radially fixed with respect to said central frame and axially fixed with respect to said housing, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 74 as follows:

74 (Amended). The fluid pump of claim 73 wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 75 as follows:

75 (Amended). The fluid pump of claim 73 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means

for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.

Amend claim 76 as follows:

³⁵
76 (Amended). A fluid pump comprising:

a housing defining a pumping chamber, a pumping chamber inlet port and a pumping chamber outlet port;

a central frame fixed with respect to said housing and disposed in said pumping chamber;

a rotatable impeller disposed in said pumping chamber for rotation about an axis about said central frame;

a polarized electromagnetic means associated with said housing and said impeller for rotating said impeller about said central frame;

a plurality of permanent magnets fixed with respect to said impeller; and

a plurality of diamagnets axially fixed with respect to said central frame and radially fixed with respect to said housing, such that each said permanent magnet is disposed in magnetic communication with a diamagnet and oriented one of generally axially and radially with said diamagnet, [whereby the plurality of permanent magnets are oriented generally axially and radially with said plurality of

diamagnets] to thereby stabilize the impeller in both the axial and radial directions by magnetic forces levitating said impeller.

Amend claim 77 as follows:

~~77~~³⁴ (Amended). The fluid pump of claim ~~76~~³⁵ wherein said impeller has a density substantially [similar] equal to the density of the fluid pumped by said fluid pump.

Amend claim 78 as follows:

78 (Amended). The fluid pump of claim 76 further comprising at least one of means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed radial directions toward the impeller and means for conducting fluid from the peripheral region of the impeller and discharging the fluid in opposed axial directions toward the impeller, whereby said impeller is levitated in at least one of said axially and radially directions by at least one of the magnetic and fluid forces.